REMARKS

Claims 1-10 are all the claims pending in the application. Claims 1, 2 and 5 are rejected. Claim 1 is amended. New claims 11-14 are added.

The amendment of claim 1 is supported by the descriptions of Paragraphs 0022 and 0024. New claims 11 and 12 are supported by the descriptions of Paragraphs 0058 and 0061. New claims 13 and 14 are supported by the descriptions of Paragraphs 0026 and 0028.

Election/Restrictions

The Examiner acknowledges Applicant's election without traverse of the method of manufacturing a molded article defined by claims 1, 2, and 5 in the reply filed on April 23, 2007. Applicant's election is confirmed and claims 3, 4 and 6-10 are withdrawn. New claims 11-14 are directed to the elected invention.

Claim Rejections - 35 USC § 102

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as anticipated by Sato (US 5,228,894). This rejection is traversed for at least the following reasons.

The Examiner asserts that Sato teaches a three-step method for press-forming a molded optical element from a heat softened molding materials in a precision molding apparatus including a first step of heating the glass material to working temperature, a second step of deforming and molding the heated material, and a third stage of cooling the molded glass to an appropriate viscosity range for removal from the molding apparatus. As to the third cooling stage, the Examiner notes that shrinkage is a recognized problem in Sato and discloses the need to optimize the functioning pressure and the functioning temperature range of a second pressing means that follows the volume shrinkage. The Examiner points to the teachings at column 10, Lines 51-54 and column 11, lines 1-4 for pertinent comments about the need to control a second press-forming by the pushing cylinder mechanism (205).

Amended Claim 1

Claim 1 has been amended to specify that the method of manufacturing a molded article has repeated pressings, and that the pressing rate is corrected on the basis of measured optical properties, so that changes in optical properties caused by the repeated pressing are cancelled.

The importance of this feature is explained with reference to Paragraphs 0021 to 0029 of the original application as filed.

Normally, various molding conditions change slightly during continuous press molding. For example, the mold separation Min provided on the molding surface of a pressing mold undergoes a change in surface state with repeated pressing. Slight changes occur even at an initial stage where several shots to several tens of shots have been made after the commencement of pressing, as explained at Paragraph [0022].

As press molding is repeated in a pressing mold, the absolute value of the third-order spherical aberration of the molded lens increases, although remaining quite low. This is shown in Fig. 4. According to the example shown in Fig. 4, which reflects the research conducted by the present inventors, the absolute value of the third-order spherical aberration is increased with the number of pressings despite being nearly zero at the start of pressing. Based on these results, according to the present invention as described in Paragraph [0026], the pressing conditions are altered so that changes in optical properties in the press molding step cancel out, causing the third-order spherical aberration to approach or reach zero. In other words, the present inventors discovered that the properties of the optical elements that are pressed are affected.

Amended claim 1 expressly states that the pressing is conducted repeatedly and the correcting of the pressing rate is effected so as to cancel changes in optical properties caused by the repeated pressing.

Sato

Sato does teach a method for press-forming a glass preform in which pressure of pressing is controlled to form a molded optical element. Sato teaches a "first press" followed by a "second press" but this teaching is only for a process of a single molded optical element in one shot, as illustrated in Fig. 5. Sato does not include any teaching with respect to the monitoring of optical properties and control of a pressing rate between several shots in which the pressing is conducted repeatedly. Specifically, Sato fails to teach the correcting of the pressing rate so as to cancel changes in optical properties caused by the repeated pressing.

Applicants respectfully submit that Sato cannot anticipate the present invention because of these missing teachings.

Claim Rejections - 35 U.S.C. § 103

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as obvious over Sato (US 5,228,894). This rejection is traversed for at least the following reasons.

First, as already noted, Sato does not teach repeated pressings, i.e., multiple shots.

Second, Sato is silent with respect to the existence of even the slightest change at an initial stage where several shots to several tens of shots have been made after the commencement of pressing. Thus there is no recognition of a problem related to pressing rate and no teaching, suggestion or motivation to control the pressing rate.

Third, Sato is even silent about that correcting of the pressing rate results in cancellation of changes in optical properties caused by the repeated pressing. Because of the complete absence of any teaching related to multiple pressings and the correction of pressing rate based on measurements of optical properties that vary due to repeated pressing, it would not be obvious to those skilled in the art to infer the present invention.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US 5,228.894. This rejection is traversed for at least the following reasons.

This claim would be patentable for the reasons given for parent claim 1.

Conclusion

Applicants respectfully submit that the claims, as now presented on the basis of amendments to claim 1, are neither anticipated by nor obvious in view of Sato. Moreover, newly added claims 11-14 provide additional limitations that are not found in the prior art.

Habeck et al

The Examiner refers to Habeck et al in conclusion of the Official Action but does not explain how Habeck et al. precludes the patentability of the present invention in combination with Sato reference. Applicant respectfully submits, however, that Habeck et al. fail to teach that correcting of the pressing rate results in cancellation of changes in optical properties caused by the repeated pressing, as now claimed.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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